1993 -1997 Five-Year Plan

Program Summary

Program: CO Catalysis

Category: Other Programs **Included in 1992-1996 Plan:** Yes

Start Date: January ,1993 **Completion Date:** September, 1993

Program Description: Evaluate the feasibility of reducing the mainstream CO delivery of cigarettes through the use of a filter containing a CO catalyst.

Importance to PM-USA: Reduced CO delivery levels may offer an advantage in the market place. Future regulations may require reporting of CO delivery levels.

Program Benefits: The program has the possibility of leading to the development of a cigarette with reduced CO delivery.

Program Leadership:

Functional Area: R&D **Department:** R&D **Program Leader:** Ken Shafer

Support Required From	1993 Man-Years	Leadership Dept. (93)
		2.05

Capital Requirements (93) $ _____ **1993-1997** $ _____ **650 Timing** _____

Program Milestones	1993				1994				1995				1996				1997			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4

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Source: https://www.industrydocuments.ucsf.edu/docs/lmvl0000

Program:	CO Catalysis		**Program No.:**	
Category:	Other Programs		**Date Prepared:**	March, 1993
Start Date:	January, 1993		**Completion Date:**	September, 1993

Program Milestones	**Responsible Person**	**Resource Allocation**	1993 1	1993 2	1993 3	1993 4	1994 1	1994 2	1994 3	1994 4
1. File for patent protection on current catalyst technology.	Diane Kellogg	0.1		X						
2. Evaluate a recently introduced commercial CO catalyst.	Jay Fournier	0.1		X						
3. Synthesize trial quantities of catalysts for evaluation.	John Paine	0.4	X	X						
3. Identify the catalysts to evaluate in test cigarettes.	Jay Fournier	0.1	X							
4. Determine activity and bed temperature for different quantities of catalysts in cigarettes.	Jay Fournier	0.1	X							
5. Determine surface area of catalysts.	Seetharama Deevi	0.1		X						
6. Carry out aging studies to quantify any change in effectiveness of the catalyst with time and/or exposure to extremes in temperature and humidity.	Jay Fournier	0.3	X	X						
7. Determine the effect of catalysts on model compounds.	Frank Hsu	0.2		X						
8. Prepare test cigarettes for biological acitivity tests.	Arlington Finley	0.1		X						
9. Evaluate the biological activity of the most promising test cigarettes.	Gerry Nixon	0.05		X						
10. Determine effect of catalysts on cigarette smoke.	Ken Shafer	0.1			X					
11. Identify structural/chemical differences in catalysts which affect their activity.	Ken Shafer	0.1			X					
12. Develop a technology base for the commercial development and manufacturing of catalysts.	Bill Edwards	0.2		X	X					
Type of Support	**Support Division**	**Mgr.**								
	ARD	0.35		X						
	CAD									
	CTSD									
	PED									
	Semi Works									

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Source: https://www.industrydocuments.ucsf.edu/docs/lmvl0000

1993 -1997 Five-Year Plan

Program Summary

Program: Predictive Maintenance

Category: Other Programs **Included in 1992-1996 Plan:** Yes

Start Date: April, 1993 **Completion Date:** June, 1994

Program Description: Support York Engineering in the use of vibration analysis techniques for make/pack machinery monitoring and diagnosis and the modification of machinery designs to solve frequently occurring problems.

Importance to PM-USA: Documented case histories at several PM facilities have demonstrated that predictive maintenance using vibration analysis has enormous potential for reducing the cost of repairs and improving machinery utilization. To date, a predictive maintenance system applicable to a packer is not commercially available. The program will develop and implement sensor and signal processing technologies for monitoring and diagnosing packers.

Program Benefits:

1. Reduction in repair part expenditures.
2. Reduction in planned maintenance and machinery sub-assembly refurbishment cost.
3. Improvement in machine utilization and performance.
4. Increase in machine reliability by correcting the design of frequently failing components.

Program Leadership:

Functional Area: R&D **Department:** R&D **Program Leader:** S. N. Ganeriwala

Support Required From	1993 Man-Years	Leadership Dept. (93)
		2.8

Capital Requirements (93) $ _____ **1993-1997** $ _____ **650 Timing** _____

Program Milestones	1993				1994				1995				1996				1997			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
1. Install accelerometers on packers	X																			
2. Develop performance trends of X2 and X500 packers using advanced signal processing techniques			X																	
3. Introduce different types of faults in lab packer subassembly and obtain corresponding vibration signatures		X																		
4. Develop a preliminary system for condition monitoring and diagnostics of X2 and X500 packers			X																	

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Source: https://www.industrydocuments.ucsf.edu/docs/lmvl0000

1993 R&D OPERATIONAL PLAN

Program Summary

Program: Predictive Maintemance **Program No.:**

Category: Other Programs **Date Prepared:** March, 1993

Start Date: April, 1993 **Completion Date:** December, 1993

Program Milestones	Responsible Person	Resource Allocation	1993 1	1993 2	1993 3	1993 4	1994 1	1994 2	1994 3	1994 4
1. Install accelerometers on packers.	Ganeriwala	0.5	X							
2. Develop performance trends of X2 and X500 packers using advanced signal processing	Dante	0.75				X				
3. Introduce different types of faults in lab packer sub-assembly and obtain corresponding vibration signatures	Ganeriwala	0.75			X					
4. Develop a preliminary system for condition monitoring and diagnostics of packers	Ganeriwala/Dante	0.8				X				

Type of Support	Support Division	Mgr.
	ARD	
	CAD	
	CTSD	
	PED	
	Semi Works	

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Source: https://www.industrydocuments.ucsf.edu/docs/lmvl0000

Progam Milestones	1993				1994				1995				1996				1997			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
5. Develop preliminary models for packer dynamics and vibration transmission paths for relating packer signature to defects						X														
6. Develop newer techniques for monitoring packer health							X													

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Source: https://www.industrydocuments.ucsf.edu/docs/lmvl0000

1993 -1997 Five-Year Plan

Program Summary

Program: Cigarette Design

Category: Other Programs **Included in 1992-1996 Plan:** No

Program Description: Develop and deploy enhancements to PM's Computer-Aided Cigarette Design program to better enable the prediction of cigarette performance and cost from design parameters. Target enhancements in accordance with priorities established by Product Development.

Importance to PM-USA: Support activities to improve quality, lower production costs, and enable a more rapid response to market place and regulatory demands.

Program Benefits:

1. Achieve better designs (with respect to cost, machinability, and quality) through optimization by computer simulation.
2. Obtain cost savings through reducing labor, material, and machine-time requirements in design and experimental trials.
3. Reduce cycle time for new product development and brand modifications.
4. Respond effectively to various external regulation challenges such as cigarette fire safety
5. Make full use of existing data and provide greater availability of design tools.

Program Leadership:

Functional Area: R&D **Department:** R&D **Program Leader:** J.W.Kao

Support Required From	1993 Man-Years	Leadership Dept. (93)
		3.0

Capital Requirements (93) $ _____ **1993-1997** $ _____ **650 Timing** _____

Program Milestones	1993				1994				1995				1996				1997			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Strategy 1.2 Release a multiple-segment filter model.		x																		
Strategy 1.3 Release a charcoal filter model.		x																		
Strategy 1.4 Release a menthol model.				x																
Strategy 1.5 Release a filter hardness model.						x														
Strategy 1.6 Release a paper web model.							x													
Strategy 2.1 Release a chalk-level model.	x																			
Strategy 2.2 Release a sidestream visibility model.				x																
Strategy 2.3 Release a banded cigarette model.			x																	
Strategy 3.1 Review and verify the existing model.			x																	
Strategy 3.2 Develop an effective & integrated blend model.						x														
Strategy 4.1 Review & verify the existing approaches..			x																	
Strategy 4.2 Userinterface development, code development, and program conversion and release.							x													

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Source: https://www.industrydocuments.ucsf.edu/docs/lmvl0000

1993 R&D OPERATIONAL PLAN

Program Summary

Program: Cigarette Design **Program No.:**

Category: Other Programs **Date Prepared:** 3/10/1993

Start Date: 1 qtr 93 **Completion Date:**

Program Milestones	Responsible Person	Resource Allocation	1993 1	1993 2	1993 3	1993 4	1994 1	1994 2	1994 3	1994 4
Strategy 1. Develop an integrated and effective .	J.W. Kao									
filter model.										
1.1 Comprehensive theoretical derivation and		0.3 PR	on-going							
simulation including perforations.										
1.2 Release a multiple-segment model.		0.2 PR		x						
1.3 Release a charcoal filter model.		0.3 PR		x						
1.4 Release a menthol model.		0.2 PR				x				
1.5 Release a filter hardness model.		0.2 PR					x			
1.6 Release a paper web model.		0.2 PR						x		
Strategy 2. Develop an integrated and effective .	J.W. Kao									
wrapper model.		0.3 PR	x							
2.2 Release a sidestream visibility model.		0.1 PR				x				
2.3 Release a banded cigarette model.		0.3 PR			x					
Strategy 3. Develop an integrated and effective .	J.W. Kao									
blend model.										
3.1 Review/verify the existing approaches.		0.1 PR			x					
3.2 Release a blend model.		0.5 PR					x			
Strategy 4. Address the user-friendliness issues.	J.W. Kao									
4.1 Evaluation, prototype, and design of graphic		0.3 CAD			x					
and language environment.		0.1 PR								
4.2 User interface development, code development,		0.9 CAD							x	
and program conversion and release.		0.2 CT								
		0.1 PR								

Type of Support	Support Division	Mgr.
	ARD	
system analyst and scientific programmer	CAD	1.2
	CTSD	
programmer analyst	CT	0.2
	Semi Works	

2022950293

Source: https://www.industrydocuments.ucsf.edu/docs/lmvl0000

1993 R&D OPERATIONAL PLAN

Program Summary

Program: Smoking Laboratory Standardization **Program No.:**

Category: General **Date Prepared:** #

Start Date: Ongoing **Completion Date:** Ongoing

Program Milestones	Responsible Person	Resource Allocation	1993 1 2 3 4	1994 1 2 3 4
Participation in PME Collaborative Study	Mitchell/Mokarry		ongoing	ongoing
Participation in TITL Collaborative Study	Mitchell/Mokarry		ongoing	ongoing
Participation in TIOJ CollaborativeStudy	Mitchell/Mokarry		ongoing	ongoing
Generate/Update Method, Procedure, and				
and Practices Documentation	Fenner/Garman		ongoing	ongoing
Conform to or prove equivalency to				
Standard Reference Procedures	Fenner/Garman		ongoing	ongoing
Participate in SLEM/PLEM Mtgs.	Fenner/Garman		ongoing	ongoing
Develop a Quality Manual	Garman			
Initiate a Internal Audit System	Garman			
Consultant to Assess Quality System	Garman			
Apply for Accreditation	Garman			
		TOTAL = 4.0		

Type of Support	Support Division	Mgr.
	ARD	
	CAD	
	CTSD	
	PED	
	Semi Works	

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Source: https://www.industrydocuments.ucsf.edu/docs/lmvl0000

DOMESTIC C.I. PROGRAM

Strategic Goal #1 Support the Growth of the Domestic and International Businesses Short Term

R&D Programs Domestic Product Support and Development

I. BACKGROUND

This activity is performed to communicate domestic market activity with respect to brand modifications and new brand introductions. It is intended to signal market trends through the comparison of current analytical data to cummulative data contained in a database.

II. OBJECTIVE

To examine competitive cigarettes on a regular basis to determine changes in the physical and cigarette smoke characteristics.

III. STRATEGIES

A. Obtain current production of major brands from ten cities every month. (Status: ongoing)

B. Obtain minor brands from six cities twice per year. (Status: ongoing)

IV. TACTICS

A. Perform complete C.I. testing on current production of major brands monthly.

B. Perform limited C.I. testing on available production of minor brands twice per year.

C. Report testing results in a bound report bimonthly.

D. Highlight new brands, brand modifications, and packaging changes monthly.

V. RESOURCES - 15.0 man-years

VI. RESPONSIBLE PERSONS

S. Laffoon, B. Strang

2022950295

Source: https://www.industrydocuments.ucsf.edu/docs/lmvl0000

SPECIFICATION MAINTENANCE PROGRAM

Strategic Goal #2 Support the Growth of the Domestic and International Businesses Short Term

R&D Programs Domestic Product Support and Development

I. BACKGROUND

This activity is performed to communicate the conformance to specifications of Philip Morris products produced domestically. Changes in smoke characteristics are signaled by trends in results based on control charts and moving averages.

II. OBJECTIVE

To examine PM current production cigarettes to determine conformance to specifications.

III. STRATEGIES

A. Obtain weekly samples of current production cigarettes. Samples are obtained from the four production faciliites in the U.S. (Status: ongoing)

B. Obtain new brand samples by day for the first week of production. (Status: ongoing)

IV. TACTICS

A. Perform Smoking/Physical Testing on weekly cigarette production.

B. Report testing results by brand and week of production on a monthly basis.

C. Report out of specification trends for tar and menthol weekly.

V. RESOURCES - 22.0 man-years

VI. RESPONSIBLE PERSONS

K. Hughes, S. Laffoon

2022950296

Source: https://www.industrydocuments.ucsf.edu/docs/lmvl0000

JAPAN/ASIA C.I. PROGRAM

Strategic Goal #2 Support the Growth of the Domestic and International Businesses Short Term

R&D Programs International Product Support and Development

I. BACKGROUND

This activity is performed to communicate the market activity with respect to brand modifications and new brand introductions in Japan, Hong Kong, India, Indonesia, Korea, Malaysia, Pakistan, Philippines, PRC, Singapore, Taiwan, and Thailand. Market trends are signaled through the comparison of current analytical data to cummulative data contained in a database.

II. OBJECTIVE

To examine competitive cigarettes on a regular basis to determine changes in the physical and cigarette smoke characteristics.

III. STRATEGIES

A. Japan - Obtain monthly samples of 35 brands selected on the basis of overall market share or market share within a segment. Samples are obtained from at least 7 different retail locations in each of five cities in Japan. (Status: ongoing)

B. Asia - Obtain samples of approximately 160 brands from retail outlets in eleven Asian markets. Samples may be obtained on a monthly, quarterly or semiannual basis, as outlined in the sampling protocol. (Status: ongoing)

IV. TACTICS

A. Perform complete C.I. testing on current samples from Japan monthly and on Asia samples as received.

B. Report Japan testing results in a bound report quarterly and report Asia results in a bound report semiannually.

C. Report new brands by memo as received. Highlight new brands, brand modifications and packaging changes in respective quarterly and semiannual reports.

V. RESOURCES - 10.0 man-years

VI. RESPONSIBLE PERSONS

S. Laffoon

2022950297

Source: https://www.industrydocuments.ucsf.edu/docs/lmvl0000

MONTHLY TESTING OF AFFILIATE AND LICENSEE PRODUCTION

Strategic Goal #2 Support the Growth of the Domestic and International Businesses Short Term

R&D Programs International Product Support and Development

I. BACKGROUND

This activity is performed to communicate the conformance to specifications of products produced by international affiliates and licensees. Competitor's products from those countries are examined to determine changes in physical and cigarette smoke characteristics. Changes in physical and cigarette smoke characteristics are signaled through the comparison of current production data to cummulative data contained in a database.

II. OBJECTIVE

To examine cigarettes produced by affiliates and licensees on a regular basis to determine conformance to specifications. To examine competitive cigarettes from international locations to determine changes in physical and smoke characteristics.

III. STRATEGIES

A. Obtain current production of brands submitted on a schedule determined by the affiliate or licensee. (Status: ongoing)

B. Obtain competitive products as submitted by the affiliate or licensee. (Status: ongoing)

IV. TACTICS

A. Perform complete C.I. testing on current monthly production or current sample, in case of competitive products.

B. Report testing results in a memo by country and month of production.

V. RESOURCES - 12.0 man-years

VI. RESPONSIBLE PERSONS

S. Laffoon

2022950298

Source: https://www.industrydocuments.ucsf.edu/docs/lmvl0000

CERTIFICATION TESTING

Strategic Goal #1 Support the Growth of the International Businesses Short Term

R&D Programs International Product Support and Development

I. BACKGROUND

This activity is performed to assure product shipped to GOC countries is within tar and nicotine limits set by the receiving countries government. Each lot produced is tested utilizing the ISO smoke method prior to shipment.

II. OBJECTIVE

To assure that export product destined for GOC countries is within the tar/ nicotine tolerance specified by the country.

III. STRATEGIES

A. Obtain 80 random packs throughout a production run for each lot. (Status: ongoing)

B. Testing must be complete five days after samples are submitted.

IV. TACTICS

A. Perform Smoking/Physical Testing on lots as received by factories.

B. Report release of product shipping.

C. Report out of specification product to Shipping, Technical Services, and Plant QA.

D. Report GOC Smoking/Physical Test results to Technical Services in a monthly report.

V. RESOURCES - 4.0 man-years

VI. RESPONSIBLE PERSONS

Chambers/Laffoon

2022950299

Source: https://www.industrydocuments.ucsf.edu/docs/lmvl0000

SMOKING LABORATORY STANDARDIZATION

Strategic Goal #1 Quality

R&D Programs General

I. BACKGROUND

In order to establish realistic product specifications and monitor product conformance to them, it is necessary to ensure the quality of the measurement systems employed. Analytical variation must be minimized to ensure that true product/process variation is being measured.

II. OBJECTIVE

To minimize analytical variation in smoking methodologies used to measure tar and nicotine deliveries of cigarettes products.

III. STRATEGIES

A. Ensure conformance of analytical targets through continued participation in collaborative studies with other domestic and international cigarette information laboratories.

B. Minimize laboratory to laboratory variation through standardization of methods, procedures and laboratory practices.

C. Learn and implement the principles and practices promoted by ISO Method 25. To be in a position to seek laboratory accreditation if warranted.

IV. TACTICS

A. Collaborative Testing

1. Continue participation in monthly PME smoking collaborative study.
2. Continue participation in semi-annual TITL smoking collaborative study.
3. Continue participation in annual TIOJ smoking collaborative study.
4. Continue participation in TTG collaborative testing with international affiliates and licensees.

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Source: https://www.industrydocuments.ucsf.edu/docs/lmvl0000

B. Standardization

1. Generate and update documentation covering all laboratory methods, procedures and practices
2. Conform to or prove equivalency to standard reference procedures (ISO, FTC, etc.).
3. Attend and actively participate in semi-annual Smoking Laboratory Experts Meeting (SLEM) and Physical Laboratory Expert Meeting with PME.
4. Continue to utilize the resources of the QA Standards Lab to pursue standardization.

C. Accreditation

1. Coordinate with PME and TTG to implement the principles and practices as outlined in ISO 25 and ISO 9000 series as part of our Total Quality initiative.
2. Develop a quality manual for the testing operation.
3. Initiate an internal audit system to assess conformance to the quality system.
4. Retain a consultant to assess quality system and it effectiveness.
5. Apply for accreditation.

V. **RESOURCES** - 4.0 man-years

VI. **RESPONSIBLE PERSONS**

R. Fenner, J. Garman, K. Mitchell, W. Mokarry

2022950301

Source: https://www.industrydocuments.ucsf.edu/docs/lmvl0000

1993 -1997 Five-Year Plan

Program Summary

Program: Other Programs

Category: CO Catalysts Included in 1992-1996 Plan: _____

Start Date: Ongoing Completion Date: Ongoing

Program Description: To evaluate the feasibility of converting carbon monoxide to carbon dioxide catalytically in a smoking cigarette.

Importance to PM-USA: To develop catalysts for incorporating into cigarette filters which potentially could reduce the amount of carbon monoxide delivered to smokers.

Program Benefits: Contract research has concluded with the synthesis and activity test of base metal catalysts composed of the oxides of Sn, Mn, Fe, and Co. These catalysts satisfy the requirements of being active at room temperature, convert CO in the presence of moisture, are of sufficient particle size (20-40mesh) so as to not require a support, and are lower in cost than noble metal catalysts. The program is responsible for the transfer of the technology in-house and evaluation of candidate catalysts in test cigarettes.

Program Leadership:

Functional Area: _____ Department: R&D Program Leader: H. Grubbs

Support Required From	1993 Man-Years	Leadership Dept. (93)

Capital Requirements (93) $ _____ 1993-1997 $ _____ 650 Timing _____

Program Milestones	1993				1994				1995				1996				1997			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4

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Source: https://www.industrydocuments.ucsf.edu/docs/lmvl0000

1993 R&D OPERATIONAL PLAN

Program Summary

Program: Other Program **Program No.:**

Category: CO Catalysts **Date Prepared:**

Start Date: Ongoing **Completion Date:** Ongoing

Program Milestones	Responsible Person	Resource Allocation	1993 1 2 3 4	1994 1 2 3 4
Synthesize trial quantities of various cobalt catalysts for evaluation.	J. Paine	0.1		
Establish characteristics of various catalysts.	J. Paine	0.1		
Improve current procedures, synthetic routes, and/or catalysts.	W. Edwards J. Paine	0.1 0.1		
Develop a technology base for the commercial development and manufacture of catalysts.	W. Edwards	0.1		
Evaluate existing technologies - Examine alternate base metal catalysts	J. Paine	0.05		
Evaluate and examine catalyst forming technologies -Determine appropiate binders for existing catalysts systems	J. Paine	0.05		

Type of Support	Support Division	Resources
Analytical Microscopy	ARD	0.1
	CAD	
	CTSD	
	PED	
	Semi Works	

2022950303

Source: https://www.industrydocuments.ucsf.edu/docs/lmvl0000

1993 -1997 Five-Year Plan

Program Summary

Program: Consumer Research Technology

Category: Evaluate Added Value Concepts **Included in 1992-1996 Plan:** _____

Start Date: Ongoing **Completion Date:** Ongoing

Program Description:

Domestically, we need to develop added-value features for existing and new full-margin brands to establish clear added-value superiority to discount brands, especially, and to competitors' premium brands.

Importance to PM-USA:

Successful new products are a critical element of the plan.

- Decline rate of Marlboro and other premium brands must be slowed/reversed to meet objectives.
- PM-USA premium brands must significantly outperform competitive brands.
- New products are projected to contribute over 10% of PM-USA profitability in 1996.

Program Benefits:

By becoming more adept at generating and implementing new product and promotional concepts to maintain consumer interests in all new products (with emphasis on adding value to premium brands), we will be in a better position to meet PM-USA's volume share and income objectives.

Program Leadership:

Functional Area: _____ **Department:** R&D **Program Leader:** H. Grubbs

Support Required From	1993 Man-Years	Leadership Dept. (93)

Capital Requirements (93) $ _____ **1993-1997** $ _____ **650 Timing** _____

Program Milestones	1993				1994				1995				1996				1997			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4

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Source: https://www.industrydocuments.ucsf.edu/docs/lmvl0000

1993 R&D OPERATIONAL PLAN

Program Summary

Program: Consumer Research Technology **Program No.:**

Category: Evaluate Added Value Concepts **Date Prepared:**

Start Date: Ongoing **Completion Date:** Ongoing

Program Milestones	Responsible Person	Resource Allocation	1993 1 2 3 4	1994 1 2 3 4
Develop cigarettes with low smoke odor	W. Edwards	0.1		
	J. Paine	0.05		
	J. Seeman	0.1		
-Provide HexylC for consumer and product				
testing				
-Complete all HexylC by-product				
evaluations				
- Prepare a detailed commercial				
plan for the manufacture of HexylC				
-Interface with appropiate personal to				
keep abreast of domestic and interantional				
potential for HexylC				
Develop cigarettes with high flavor/low tar	J. Seeman	0.25		
- Evaluate sensory technology tool for				
maximum flavor impact				
- Examine ways to maximize nicotine's				
impact				

Type of Support	Support Division	Mgr.
	ARD	
	CAD	
	CTSD	
	PED	
	Semi Works	

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Source: https://www.industrydocuments.ucsf.edu/docs/lmvl0000

1993 -1997 Five-Year Plan

Program Summary

Program: Operational Support

Category: Environment Support **Included in 1992-1996 Plan:** _____

Start Date: Ongoing **Completion Date:** Ongoing

Program Description: **To develop techniques/technologies to destroy/convert designated components present in process streams and/or facilities into materials which are convenient to handle.**

Importance to PM-USA: It is important for PM to meet federally dictated concentrations of the designated components present in process streams and/or facilities. For example, phosphine concentrations at the fenceline are regulated and compliance is necessary to ensure continued use of phosphine as a fumigant. Alternate methods to control cigarette beetle populations do not eliminate the need to fumigate tobacco warehouses.

Program Benefits: Compliance with federal regulations will ensure continued operation of our facilities. In the case of phosphine, a federally regulated toxic compound, a control method which eliminates the need to exhaust phosphine into the environment is needed.

Program Leadership:

Functional Area: _____ **Department:** R&D **Program Leader:** H. Grubbs

Support Required From	1993 Man-Years
Leadership Dept. (93)	

Capital Requirements (93) $ _____ **1993-1997** $ _____ **650 Timing** _____

Program Milestones	1993				1994				1995				1996				1997			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4

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Source: https://www.industrydocuments.ucsf.edu/docs/lmvl0000

1993 R&D OPERATIONAL PLAN

Program Summary

Program: Operational Support **Program No.:**

Category: Environmental Support **Date Prepared:**

Start Date: Ongoing **Completion Date:** Ongoing

Program Milestones	Responsible Person	Resource Allocation	1993 1 2 3 4	1994 1 2 3 4
Phosphine Abatement				
Participate with Engineering in evaluation of phosphine monitors	C. Howe	0.45		
Evaluate liquid adsorbers	C. Howe/K. Podraza	0.35/0.15		
- Investigate aqueous oxidant systems	J. Seeman	0.1		
- Identify "best" system for reactor design				
- Collaborate with Engineering on system design				
- Participate with Engineering in the Pilot testing of the "best" system				
Evaluate alternate solid adsorbers	C. Howe/K. Podraza	0.30/0.10		
- Investigate zeolite supported systems	J. Seeman	0.1		
- Investigate alternate carbon supported systems				
- Identify "best" system for reactor design				
- Collaborate with Engineering for system design				
- Participate with Engineering in the pilot testing of the "best" system				
Evaluate regeneration of spent silver on carbon	C. Howe/K. Podraza	0.05/0.05		
- Investigate recycle efficiency				
- Investigate alternative methods for silver reactivation				
Evaluate properties of commercial silver on carbon materials	C. Howe/K. Podraza/ J. Paine	0.05/0.05 0.05		

Type of Support	Support Division	Resource Allocation
Analyses	ARD	0.3
	CAD	
	CTSD	
	PED	
	Semi Works	

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Source: https://www.industrydocuments.ucsf.edu/docs/lmvl0000

1993 R&D OPERATIONAL PLAN

Program Summary

Program: Operational Support **Program No.:** _____

Category: Enviromental Support **Date Prepared:** _____

Start Date: _____ **Completion Date:** _____

Program Milestones	Responsible Person	Resource Allocation	1993 1 2 3 4	1994 1 2 3 4
Work with Engineering to develop a silver on carbon system	W. Edwards K. Podraza	0.05 0.05		
Coordinate waste analysis for hazard classification and regulatory compliance	K. Podraza	0.2		
Synthesize speciality catalysts	J. Paine	0.2		
Develop a commercial supply of catalysts and/or adsorbents	W. Edwards	0.2		
- Establish a technology base of commercial sources				
- Obtain necessary legal agreements				
- Establish joint effort with selected companies				
- Coordinate joint research efforts				
Investigate new technologies applicable to phosphine abatement	C. Howe/K. Podraza	0.05/0.05		
Environmental Support	C. Howe J. Paine K. Podraza	0.05 0.05 0.10		
Support other necessary environmental research in:				
- Nicotine destruction methods				
- TKN analysis methods				
- Methods to improve the quality of Park 500 potassium nitrate				
- Adsorption technology				
- Hazard classification for waste materials				

Type of Support	Support Division	Mgr.
	ARD	
	CAD	
	CTSD	
	PED	
	Semi Works	

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Source: https://www.industrydocuments.ucsf.edu/docs/lmvl0000

1993 -1997 Five-Year Plan

Program Summary

Program: Reduced Sidestream Papers

Category: Paper Technology / Product Development **Included in 1992-1996 Plan:** _____

Start Date: _____ **Completion Date:** _____

Program Description: **The mission of the program is to develop improved and/or proprietary cigarette papers to address product needs, improve product performance and manufacturing efficiency, and to meet external requirements.**

Importance to PM-USA:

1. Improved product performance through optimization of existing cigarette papers.
2. Support for new product development.
3. Provide the means for response to market or other external requirements.

Program Benefits:

Program Leadership:

Functional Area: _____ **Department:** R&D **Program Leader:** H. Grubbs

Support Required From	1993 Man-Years	Leadership Dept. (93)

Capital Requirements (93) $ _____ **1993-1997** $ _____ **650 Timing** _____

Program Milestones	1993				1994				1995				1996				1997			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4

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Source: https://www.industrydocuments.ucsf.edu/docs/lmvl0000

1993 R&D OPERATIONAL PLAN

Program Summary

Program: Reduced Sidestream Papers **Program No.:**

Category: Paper Technology / Product Development **Date Prepared:**

Start Date: On-going **Completion Date:** On-going

Program Milestones	Responsible Person	Resource Allocation	1993 1 2 3 4	1994 1 2 3 4
Develop magnesium based reduced sidestream	J. Paine	0.05		
fillers	J. Seeman	0.10		
- Evaluate hand sheets of existing				
aqueous sol-gel composition				
-Determine "best" magnesium compostion				
for sidestream reduction				
-Complete patent applications				
Develop calcium carbonate reduced sidestream	J. Paine	0.05		
fillers				
-Summarize and report the results obtained				
on alternate calcium carbonates.				

Type of Support	Support Division	Resource Allocation
	ARD	
	CAD	
	CTSD	
	PED	
	Semi Works	
Paper and cigarette production and evaluation	PT	0.75

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Source: https://www.industrydocuments.ucsf.edu/docs/lmvl0000

1993 -1997 Five-Year Plan

Program Summary

Program: Product Research (Filter Technology)

Category: Product Development **Included in 1992-1996 Plan:** _____

Start Date: Ongoing **Completion Date:** _____

Program Description: **The program's objective is to identify commercial technologies and apply them to the design and development of new and unique filters products. In addition, this program supports the existing business in the areas of operations optimization, cost improvement, quality improvement, and management of environmental issues.**

Importance to PM-USA: This program provides opportunities for product development and resulting market share improvements. Provides for the improvement of PM's competitive position through the development of novel and proprietary technologies. The program allows PM to maintain a superior quality image and position among it's competitors.

Program Benefits: Program benefits include new and unique filter materials and configurations. Program provides cost and performance improvements in existing product applications.

Program Leadership:

Functional Area: _____ **Department:** R&D **Program Leader:** H. Grubbs

Support Required From **1993 Man-Years** **Leadership Dept. (93)**

Capital Requirements (93) $ _____ **1993-1997** $ _____ **650 Timing** _____

Program Milestones	1993				1994				1995				1996				1997			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4

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Source: https://www.industrydocuments.ucsf.edu/docs/lmvl0000

1993 R&D OPERATIONAL PLAN

Program Summary

Program: Product Research (Filter Technology) **Program No.:** _____

Category: Product Development **Date Prepared:** _____

Start Date: Ongoing **Completion Date:** Ongoing

Program Milestones	Responsible Person	Resource Allocation	1993 1 2 3 4	1994 1 2 3 4
Novel Filter Development	W. Edwards	0.25		
- Summarize results obtained with Fibrid containing webs and with Filter Technology determine future direction				
- Fibrid bound materials				
- Coordinate interations with Courtaulds on development of new Fibrid systems				
- Work with R&D departments to determine materials of interest for evaluation				
- Coordinate production of fibrid bound at Courtaulds				
- Laminated web materials				
- Provide chemical expertise on laminates				
- Develop high efficiency filter webs from Tencel spun cellulose fiber				
- Coordinate all activities between PM and outside vendors				
- Provide chemical expertise on cellulosic system and other chemical issues				
- Collaborate with Filter Technology on the production of improved Tencel webs				
- Hydroentangled CA webs				
- Coordinate the activities between PM and outside vendors				
- Collaborate with Filter Technology on the production of improved CA webs				

Type of Support	Support Division	Mgr.
	ARD	
	CAD	
	CTSD	
	PED	
	Semi Works	

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Source: https://www.industrydocuments.ucsf.edu/docs/lmvl0000

1993 R&D OPERATIONAL PLAN

Program Summary

Program: Product Research (Filter Technology) **Program No.:** _____

Category: Product Development **Date Prepared:** _____

Start Date: Ongoing **Completion Date:** Ongoing

Program Milestones	Responsible Person	Resource Allocation	1993 1 2 3 4	1994 1 2 3 4
- Eastman CA web evaluation				
- Collaborate with Filter Technology on the evaluation of new webs from Eastman				
- Evaluate Tencel tow				
- Coordinate the interaction between Courtaulds and PM on Tencell Tow				
- Collaborate with Filter Technology on the evaluation of Tencell Tow				
- Collaborate with Filter Technology on the evaluation of new materials, technologies, and filter forming processes				
- Work with Filter Technology to develop a strategic understanding of worldwide filter technology				
- Work with Filter Technology to keep abreast of all aspects of cigarette filter environmental issues				
- Develop heterofil fibers with Celanese				
- Provide chemical expertise for the program				

Type of Support	Support Division	Mgr.
	ARD	
	CAD	
	CTSD	
	PED	
	Semi Works	

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Source: https://www.industrydocuments.ucsf.edu/docs/lmvl0000

1993 -1997 Five-Year Plan

Program Summary

Program: Other Program

Category: Maintain N.R.C. Materials License **Included in 1992-1996 Plan:** _____

Start Date: Ongoing **Completion Date:** Ongoing

Program Description: **Monitor the use of radio-tracers in the conduct of approved projects within R&D. Standards are dictated by Title 10 - Code of Federal Regulations and PM U.S.A.'s Materials License application and letters to the Nuclear Regulatory Commission's Offices located in Atlanta, GA.**

Importance to PM-USA: As an approved holder of a materials license for certain radiochemicals, this facility can conduct radio-tracer investigations pertinent to the company's business.

Program Benefits: The primary concern of a radiochemical materials licensee is the health and safety of employees and the general public in the use of Radio-isotopes. The usefulness of this program is dictated by the individual projects to which this technology is applied. Past results have shown isotope usage to be extremely useful in resolving issues that could not have been addressed otherwise.

Program Leadership:

Functional Area: _____ **Department:** R&D **Program Leader:** H. Grubbs

Support Required From **1993 Man-Years** **Leadership Dept. (93)**

Capital Requirements (93) $ _____ **1993-1997** $ _____ **650 Timing** _____

Program Milestones	1993				1994				1995				1996				1997			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4

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Source: https://www.industrydocuments.ucsf.edu/docs/lmvl0000

1993 R&D OPERATIONAL PLAN

Program Summary

Program: Other Program **Program No.:** _____

Category: Maintain N.R.C. Materials License **Date Prepared:** _____

Start Date: Ongoing **Completion Date:** Ongoine

Program Milestones	Responsible Person	Resource Allocation	1993 1 2 3 4	1994 1 2 3 4
Inventory Control	A. Fritsch	AF - 0.10		
		JK - 0.05		
		JJ - 0.05		
Purchase, Receipt, and Delivery of Radiochemicals	A. Fritsch	AF - 0.01		
		JK - 0.05		
		JJ - 0.05		
Laboratory Monitoring and Inspection	A. Fritsch	AF-0.30, JK-0.01		
Radiochemical Waste Disposal	A. Fritsch	AF - 0.10		
		JK - 0.10		
		JJ - 0.10		
Dosimetry	A. Fritsch	AF - 0.10		
		JK - 0.05		
		JJ - 0.01		
Training - users and new team member by R.S.O.	A. Fritsch	AF - 0.20		
		JK - 0.10, JJ - 0.40		
Regulatory Issues - Amending license, records, 10 FCR, fees, procedures, service contracts		AF - 0.3		
Support to users - Greenhouse operations	A. Fritsch	AF - 0.05		
		JK - 0.10		
		JJ - 0.15		
Decomissioning of Laboratory Spaces	A. Frisch	AF - 0.1, JK - 0.25		
		JJ - 0.15		
Special Counting Requests	A. Fritsch	AF - 0.1		

Type of Support	Support Division	Mgr.
	ARD	
	CAD	
	CTSD	
	PED	
	Semi Works	

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Source: https://www.industrydocuments.ucsf.edu/docs/lmvl0000

1993 -1997 Five-Year Plan

Program Summary

Program: Packaging Technology

Category: UV Offset Printing **Included in 1992-1996 Plan:** _____

Start Date: Ongoing **Completion Date:** Ongoing

Program Description: **Promotional packagings are being used to stimulate cigarette sales. Promotional advertising requires rapid printing, immediate use of printed materials, and clear graphics. UV offset printing is being evaluated to meet the necessary criteria while maintaining subjectively acceptable cigarettes. Analytical methodology is being investigated to predict subjective acceptability of printed materials based on a specific system.**

Importance to PM-USA: Promotional packagings are being used to stimulate cigarette sales and must not contribute to any subjective deficite of the cigarette product.

Program Benefits: See Importance to PM-USA

Program Leadership:

Functional Area: _____ **Department:** R&D **Program Leader:** H. Grubbs

Support Required From **1993 Man-Years** **Leadership Dept. (93)**

Capital Requirements (93) $ _____ **1993-1997** $ _____ **650 Timing** _____

Program Milestones	1993				1994				1995				1996				1997			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4

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Source: https://www.industrydocuments.ucsf.edu/docs/lmvl0000

1993 R&D OPERATIONAL PLAN

Program Summary

Program: Packaging Technology **Program No.:**

Category: UV Offset Printing **Date Prepared:**

Start Date: Ongoing **Completion Date:** Ongoing

Program Milestones	Responsible Person	Resource Allocation	1993 1 2 3 4	1994 1 2 3 4
Participate in the development of analytical	K. Podraza	0.15		
methodology to identify transferable components				
- Collect and maintain the current				
formulations data				
- Predict possible reactions and/or side				
reaction products				
- Determine possible transferred				
component / formulation component				
relationships				
Contribute chemical expertise to the program	K. Podraza	0.1		
- Maintain information regarding ongoing				
studies				
- Transfer information between ARD, FTI,				
and PTS				
- Assist in formulation modifications				

Type of Support	Support Division	Mgr.
	ARD	
	CAD	
	CTSD	
	PED	
	Semi Works	

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Source: https://www.industrydocuments.ucsf.edu/docs/lmvl0000

1993 -1997 Five-Year Plan

Program Summary

Program: Domestic/International Product Development (Operations Driven)

Category: _____ **Included in 1992-1996 Plan:** Yes

Start Date: 1st Quarter, 1993 **Completion Date:** _____

Program Description: See Program Description

Importance to PM-USA: See Program Description

Program Benefits: Minimize loss of flavors and reduce ethanol emission (also see program description)

Program Leadership:

Functional Area: _____ **Department:** _____ **Program Leader:** _____

Support Required From	1993 Man-Years	Leadership Dept. (93)
ARD	TBD	
PRD	TBD	
PD	TBD	

Capital Requirements (93) $ _____ **1993-1997** $ _____ **650 Timing** _____

Program Milestones	1993				1994				1995				1996				1997			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Encapsulate menthol and aftercut flavors formulation																				
in brewer's yeast:																				
I. Application of control to tobacco																				
II. Liquid menthol																				
III. Aftercut flavors																				

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Source: https://www.industrydocuments.ucsf.edu/docs/lmvl0000

1993 R&D OPERATIONAL PLAN

Program Summary

Program: Domestic/International Product Development Program No.: _____

Category: _____ Date Prepared: _____

Start Date: _____ Completion Date: _____

Program Milestones	Responsible Person	Resource Allocation	1993 1 2 3 4	1994 1 2 3 4
Encapsulation of menthol and aftercut flavor formulation				
In Brewer's yeast:				
I. Evaluate application of brewer's yeast control	T. Van Auken	0.10		
to tobacco and determine stability during	Y. Houminer	0.15		
manufacturing and storage.				
II. Liquid Menthol	R. Johnson	0.10		
1. Identify subjectively acceptable liquid menthol	T. Van Auken	0.10		
phases suitable for encapsulation in yeast				
2. Evaluate stability and release profiles				
3. Evaluate efficacy in prototype				
III. Aftercut flavors				
1. Evaluate encapsulation of various aftercut	Y. Houminer	0.10		
flavors	J. Seeman	0.10		
2. Evaluate stability and thermal release profiles	R. Johnson	0.10		
	T. Van Auken	0.10		
3. Evaluate efficacy in prototype				
Type of Support	Support Division	Mgr.		
Quantitative analysis of menthol and other flavors	ARD	0.10		
	CAD			
	CTSD			
	PED			
Application to tobacco	Semi Works	0.10		

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Source: https://www.industrydocuments.ucsf.edu/docs/lmvl0000

1993 -1997 Five-Year Plan

Program Summary

Program: Special Project Work Team Project

Category: Market Place Driven **Included in 1992-1996 Plan:** Yes

Start Date: First Quarter, 1993 **Completion Date:** _____

Program Description: Provide a stable menthol system for use in the Special Project Work Team (see also Special Project Work Team program description).

Importance to PM-USA: Mentholated smoking article requires a stable source of menthol compatible with manufacturing processes (see also Special Project Work Team program description).

Program Benefits: A stable source of menthol will allow the manufacturing and marketing of a menthol Beta product (see also Special Project Work Team program description).

Program Leadership:

Functional Area: Special Project Work Team **Department:** _____ **Program Leader:** _____

Support Required From	1993 Man-Years	Leadership Dept. (93)
ARD	TBD	
PRD	TBD	

Capital Requirements (93) $ _____ **1993-1997** $ _____ **650 Timing** _____

Program Milestones	1993				1994				1995				1996				1997			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Develop a stable menthol system for use in Special Project																				
Work Team Project																				
I. Menthol absorbed on carbon																				
II. Menthol in Ca-alginate																				
III. Dispersion of menthol																				
IV. Analytical methods to quantify menthol																				
V. Menthol in starch-based adhesives																				
VI. Menthol in gums/polysaccharides																				
VII. Menthol in PVA																				
VIII. PolyMIC																				

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Source: https://www.industrydocuments.ucsf.edu/docs/lmvl0000

1993 R&D OPERATIONAL PLAN

Program Summary

Program: Special Project Work Team **Program No.:**

Category: **Date Prepared:**

Start Date: **Completion Date:**

Program Milestones	Responsible Person	Resource Allocation	1993 1 2 3 4	1994 1 2 3 4
Develop a stable menthol system for use in the Special Project				
Work Team Products				
I. Menthol absorbed on carbon	Y. Houminer	0.40		
1. Determine absorption, thermal				
desorption and stability profiles for				
various forms of carbon.				
2. Evaluate efficacy in prototype				
II. Menthol in Ca-alginate (microcapsules)	R. Johnson	0.50		
1. Evaluate previous in-house work and				
improve process				
2. Explore technology available outside				
(SWRI)				
3. Explore grinding processes of larger				
capsules to achieve appropriate capsule				
size. Evaluate stability				
4. Determine release profile				
5. Evaluate efficacy in prototype				
III. Develop methods to disperse menthol in aqueous	R. Johnson	0.30		
media containing shell wall materials				
IV. Develop analytical methods to quantify menthol	T. Van Auken	0.40		
including isolation techniques from different				
stable menthol systems.				
V. Menthol in starch-based adhesives	J. Seeman	0.10		
1. Identify potential adhesives and evaluate	Y. Houminer	0.10		
loading capacity which retains adhesive				
properties				
2. Evaluate stability and determine release				
profile				
3. Evaluate efficacy in prototype				

Type of Support	Support Division	Mgr.		
	ARD			
	CAD			
	CTSD			
	PED			
	Semi Works			

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Source: https://www.industrydocuments.ucsf.edu/docs/lmvl0000

1993 R&D OPERATIONAL PLAN

Program Summary

Program: Special Project Work Team Program No.: _____

Category: _____ Date Prepared: _____

Start Date: _____ Completion Date: _____

Program Milestones	Responsible Person	Resource Allocation	1993 1 2 3 4	1994 1 2 3 4
VI. Menthol in gums/polysaccharides	J. Seeman	0.10		
1. Explore coating and printing methods	Y. Houminer	0.10		
to apply menthol dispersed in different gums/				
polysaccharides to RL sheet (thin film				
formation)				
2. Evaluate stability and release profiles				
3. Evaluate efficacy in prototype				
VII. Menthol in PVA	T. Van Auken	0.30		
1. Identify PVA formulation as encapsulation				
medium				
2. Explore coating and printing methods				
3. Determine stability and release profiles				
4. Evaluate efficacy in prototype				
VIII. PolyMIC	J. Seeman	0.05		
1. Evaluate previous cost analysis	Y. Houminer	0.05		
and apply it to Special Project Work Team				

Type of Support	Support Division	Mgr.
Quantitative analysis of menthol in	ARD	0.25
stable menthol formulation	CAD	
	CTSD	
Smoke analysis	PED	
	Semi Works	
Technology Support	PD	0.10

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Source: https://www.industrydocuments.ucsf.edu/docs/lmvl0000